Putting "System" Back into Ecosystem Services and Connecting the Resilience of Both

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Motivation for this talk

• It began with talk of the restoration work related to Deepwater Horizon.

• Are we going to avoid “Death by a thousand ..” unconnected restoration/protection projects?

• If we are concerned about the potential supply of ecosystem services we should capture, in a more complete manner, where they come from.
Motivation for this talk

- It began with talk of the restoration work related to Deepwater Horizon.
- Are we going to avoid "Death by a thousand..." unconnected restoration/protection projects?
- If we are concerned about the potential supply of ecosystem services, shouldn't we capture in a more complete manner where they come from?
Ecosystem Services - MEA (2005)

Regulating
- Nutrient cycling
- Net primary production
- Pollination & seed dispersal
- Habitat
- Hydrological cycle
- Soil formation

Supportive
- Gas regulation
- Climate regulation
- Disturbance regulation
- Biological regulation
- Water regulation
- Soil retention
- Waste regulation
- Nutrient regulation

Regulating & Supportive

Provisioning
- Water supply
- Food
- Raw materials
- Genetic resources
- Medicinal resources
- Ornamental resources

Cultural
- Recreation
- Aesthetic
- Science & education
- Spiritual & holistic

Source: Millennium Ecosystem Assessment 2005
Ecosystem Services - Today

Movement away from the four traditional categories and the ~24 ecosystem services.

We need to be measuring final or direct services (Boyd and Banzhaf, 2007)

Many final or direct ES emanate from a “system”:
- Water quality
- Recreational fishing
- Storm protection
- Etc …

There are many services that you can attach to a particular biophysical feature:
- Carbon sequestration
- Nutrient regulation
- Etc …
Resilient Ecosystem Services

Resilient ecosystems can lead to the resilience of specific ecosystem services. However, ecosystems typically generate multiple ecosystem services.

If the system is viewed through the lens of ecosystem services, then there is a need to identify the most relevant services and how these may be affected by potential alternate states of the system.

Problem: We look at ES coming from a bio-physical feature that is not homogenous.

Storm protection
Fishing
Clean water
Food
Fiber
Heterogeneity

The quality and resilience of these services is directly linked to the structural condition of the marsh.
Focusing on the resilience of a particular state of a habitat (fragmented versus continuous marsh) can also lead to resilient ecosystem services that are connected to a specific state of the habitat. But there will be tradeoffs between services.

Reversing the ‘optics’ will allow us to look at services that emanate from a system rather than from a particular bio-physical feature.
Can we put “system” back in ecosystem services?

Yes, of course. But, it takes:

• Commitment from the bio-physical and social, behavioral and economic sciences to work together.

• Commitment from funders.

• Link to policy and management issues that consider the system.

Is it being done?

Yes:

• But on a limited basis. Not nearly as much as work focused on a single habitat. Why?